

College) on June 16, in presenting for the honorary degree of Doctor in Science Sir Archibald Geikie, F.R.S., Director-General of the Geological Survey of Great Britain and Ireland; Mr. W. H. Flower, C.B., F.R.S., Director of the Natural History Museum; and Dr. Elias Metschnikoff, *Chef de Service* of the Institut Pasteur, Paris.

Salutamus deinceps virum et scientiarum et litterarum laude illustrem, in Academia Edinensi quondam Geologiae Professorem, Britanniae et Hiberniae explorationi Geologiae praepositum, societatis Regiae socium, societatis geologicae praesidem, societatis denique Britannicae scientiarum terminis prorogandis praesidem designatum. Geologiae et geographiae studiosorum in manibus sunt scripta eius plurima, scientiis illis aut docendis aut illustrandis destinata. Etiam aliis loquuntur libri eius elegantissime conscripti, quorum in uno Caledoniae montes vallesque per immensam saeculorum seriem causis cotidianis minutatim exsculptas fuisse demonstrat; in altero vitam et res gestas geologi magni, quem Siluriae regem nominaverim, ea quae par est dignitate describit. Viri talis laboribus non modo geologiae fines latius indies propagantur, sed etiam populo universo studia illa praeclara commendantur.

Duco ad vos geologum illustrem, ab ipsa Regina nuper novo honore ornatum, ARCHIBALDUM GEIKIE.

Quod e sapientibus septem unus dixisse fertur, ἀρχὴ ἄνδρα δέλει, de hoc certe viro, per honorum cursum satis longum probato, verum esse constat. Regio Chirurgorum in Collegio, primum Museo conservando praepositus, deinde physiologiam et comparativam quae dicitur anatomiam professus, deinceps Musei Britannici aedificio novo rerum naturae studiis dedicato praefectus est. Idem societati et zoologicae, et anthropologiae, et Britannicae, maxima cum laude praefuit. In Museis autem ordinandis quam perspicax; in scientiarum studiis populo toti commendandis quam disertus; hominum in diversis generibus capitis mensura inter sese distinguendis quam subtilis; maris denique in monstris immensis describendis quam minutus. Ergo, velut alter Neptunus, intra regni sui fines etiam "immania cete" suo sibi iure vindicat; idem, anthropologiae quoque in studiis versatus, ne barbaras quidem gentes contempsit, sed, velut alter Chremes, homo est; humani nil a se alienum putat.

Duco ad vos Regiae societatis socium, virum honoribus plurimis merito cumulatum, WILHELMUM HENRICUM FLOWER.

Sequitur deinceps vir, qui scientiarum in provinciis duabus, et in zoologia et in bacteriologia quae dicitur, famam insignem est adeptus. Primum Ponti Euxini in litore septentrionali zoologiam professus, multa de morphologia animalium, quae invertibrata nominantur, accuratissime disseruit. Deinde Parisiis rerum naturae investigatori celeberrimo adiutor datus, eis potissimum causis perscrutandis operam dedit, per quas genere ab humano morborum impetus hostiles possent propulsari. Nam, velut hominum in mentibus virtutes et vitia inter sese confligunt, non aliter animantium in corporibus contra pestium exercitus copiae quaedam sanitatis et salutis ministrae concertare perhibentur. Mentis quidem certamen olim in carmine heroico, Psychomachia nominato, Prudentius narravit. Inter eos autem qui corporis certamen experimentis exquisitis nuper explicaverunt, locum insignem sibi vindicat vir quidam summa morum modestia praeditus, qui, velut vates sacer, proelium illud sibi sumpsit celebrandum, in quo tot cellulae vagantes, quasi milites procurantes, morborum semina maligna corripunt, correpta comprimunt, compressa extinguunt. Talium virorum auxilio febrium cohortes paulatim profligantur, et generis humani saluti novum indies affertur incrementum.

Merito igitur titulo nostro hodie coronatur e salutis humanae ministris unus, ELIAS METSCHNIKOFF.

At the annual election at St. John's College on June 22 the following awards in Natural Science were made:—Foundation Scholarships, continued or increased: P. Horton-Smith, Hewitt, Blackman, Woods, MacBride, Whipple. Foundation Scholarship awarded: Villy. Exhibitions: Purvis, Trotman. Hughes Prize: MacBride. Wright's Prize: Villy. In the Natural Sciences Tripos, Part II., Capstick, of Trinity, has been awarded "special distinction" in two subjects, Chemistry and Physics. It is many years since this last occurred. MacBride, of St. John's (Zoology, Botany), and Krishnan, of Christ's (Chemistry, Botany), have gained first classes in two subjects. Of the women candidates, Miss Elliot, of Newnham (Zoology), and Miss Tebb, of Girton (Physiology), have gained first class honours.

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SCIENTIFIC SERIALS.

American Journal of Science, June.—The study of the earth's figure by means of the pendulum, by E. D. Preston. The author first deals with the history of the subject, then states the quantities involved, and supports the method of study in which the figure of the earth is considered separately from its size as determined by measurement of arcs of meridian. The general results of pendulum work are discussed, and the effect of continental attraction and variations in latitude referred to. The best methods of determining the duration of a pendulum oscillation at a given temperature and pressure are also considered.—On the post-glacial history of the Hudson River valley, by Frederick J. H. Merrill. The result of the action of waves upon a shore depends upon the state of rest or movement of the shore. If the land is subject to alternate periods of rest and elevation, a series of terraces will be formed; if the land is slowly rising or subsiding with respect to sea-level, an inclined plane of erosion may be produced. Arguing from this and other facts, the author states provisionally that, after the retreat of the continental glacier from the Hudson River valley, the land stood for a long time at a lower level than at present. A gradual elevation and extensive erosion of the Champlain estuary deposits in the river valley then occurred, and was followed by a depression amounting to about 100 feet at New York, and which is apparently continuing at the present day.—On alunite and diaspore from the Rosita Hills, Colorado, by Whitman Cross.—Diaspore crystals, by W. H. Melville.—Combustion of gas jets under pressure, by R. W. Wood. Anyone who has watched a burning jet of ether vapour will have noticed that, as the pressure increases, the flame gradually retreats from the orifice and eventually goes out if the pressure is carried beyond a certain point. The author has investigated these phenomena, using various gases. A burning jet of coal gas was extinguished when the pressure was equal to 23 centimetres of mercury—that is, when the velocity of the issuing gas exceeded the speed of combustion for the mixture of gas and air.—Allotropic silver: Part iii., blue silver, soluble and insoluble forms, by M. Carey Lea. From the results given in this and preceding papers, the author is led to believe that allotropic and even soluble silver may be formed in numerous ways. The reducing agents may be either a ferrous or a stannous salt, or any one of a variety of organic substances of very different constitutions. From the solubility and activity of this substance, and the parallelism which many of its reactions show to those of silver in combination, it appears probable that silver in solution, like silver in combination, exists in the atomic form.—Note on the submarine channel of the Hudson River, and other evidences of post-glacial subsidence of the middle Atlantic coast region, by A. Lindenhohl.—Are there glacial records in the Newark system?, by Israel C. Russell. Facts are adduced in support of the negative view.—A reply to Prof. Nipher on the theory of the solar corona, by F. H. Bigelow.—On the recent eruption of Kilauea, by W. T. Brigham. This is a report of the changes that took place in the crater of Kilauea during March of this year.—Turquoise in south-western New Mexico, by Charles H. Snow.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 18.—"Results of Hemisection of the Spinal Cord in Monkeys." By Frederick W. Mott, M.D., B.S., M.R.C.P. Communicated by Prof. Schäfer, F.R.S.

While engaged in studying experimentally the connections of the cells of Clarke's column with the ascending tracts of the spinal cord in the monkey, I was surprised to find that after hemisection in the lower dorsal region the sensory disturbances produced in no way corresponded with those already obtained by eminent observers.

I was therefore led to continue my experiments, and, by the kind permission of Prof. Schäfer, I carried them out in the Physiological Laboratory of University College. My thanks are also due to him for much valuable advice and assistance.

The subject is one of great importance from a scientific, as well as from a clinical, point of view. Some years ago, a case occurred in my practice which tended to shake my faith in the absolute truth of the doctrine of complete and immediate decus-

sation of sensory impulses in the spinal cord, as taught by Brown-Séquard.

The experiments which I have performed exhibit the following principal points of interest:—

(1) Return of associated movements after complete destruction of the crossed pyramidal tract below the lesion.

(2) That all sensory impulses do not decussate in the cord—in fact, they appear to show that certain sensory impulses, *e.g.* touch, the muscular sense, and localization in space, pass chiefly up the same side, painful impressions up both sides. A peculiar condition known as “alochiria” occurs after hemisection.

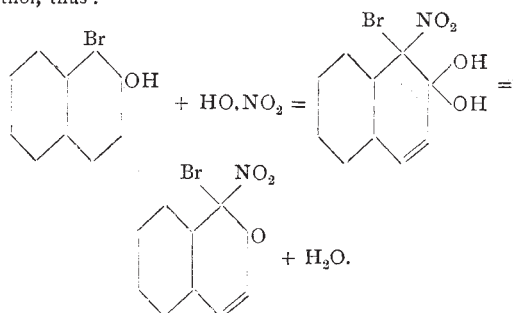
(3) The vaso-motor disturbances are on the same side as the lesion, and consist of vaso-dilation, swelling of the foot, and redness with rise of temperature of the skin of the foot (as compared with the opposite side), and fall of temperature in the popliteal space on the side of the lesion, due, no doubt, to paralysis of the muscles.

(4) The degenerations above and below the lesion are limited to the same side when the injury is perfectly unilateral. There are certain facts connected with the degenerations which serve to show the origin and course of certain long and short tract fibres.

(5) Stimulation of the cortex cerebri on both sides some weeks or months after the hemisection had been performed gave, as a rule, results which showed that the block in the spinal cord produced by the hemisection still existed, although there had been a very complete return of associated movements.

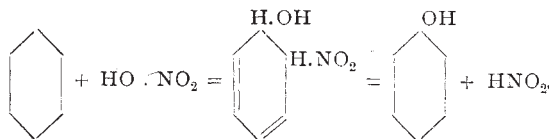
(6) In one case ablation of the leg area on the same side as the lesion in the spinal cord was performed many months afterwards.

Chemical Society, May 21.—Prof. A. Crum Brown, F.R.S., President, in the chair.—The following papers were read:—Bromo-derivatives of betanaphthol, by H. E. Armstrong and E. C. Rossiter. The authors have completed the study of the compounds formed on brominating betanaphthol, to which they have referred in two previous notices (Chem. Soc. Proceedings, 1889, p. 71; 1890, p. 32). In the present paper they give directions for preparing tri- and tetra-bromobetanaphthol, and summarize the properties of the bromobetanaphthols. The entire product of the action of bromine in excess on betanaphthol, has been carefully examined without any substance having been discovered which affords 1 : 2 : 3-bromophthalic acid on oxidation; the discrepancy between the authors' observations and the earlier experiments of Smith and Meldola, therefore, yet remains to be discovered.—The action of nitric acid on naphthol derivatives as indicative of the manner in which nitration is effected in the case of benzenoid compounds generally; the formation of nitro-keto-compounds, by H. E. Armstrong and E. C. Rossiter. The chloro- and bromo-derivatives of betanaphthol when warmed with nitric acid are converted into derivatives of betanaphthoquinone; but the formation of these compounds is preceded by that of an unstable intermediate compound. These intermediate compounds, when carefully heated, are converted into derivatives of betanaphthoquinone. Thus, when nitric acid is added to dibromobetanaphthol, suspended in acetic acid, a clear solution is obtained which, after a short time, deposits a crystalline substance; if quickly evaporated by filtration, this product is almost colourless, but it decomposes when kept, becoming yellow. This compound, when treated with alkali, yields bromonitronaphthol. Bromobetanaphthol, in like manner, yields α_1 -nitro-betanaphthol, and the tri- and tetra-bromo-derivatives yield di- and tri-bromonitrobetanaphthol. The authors are of opinion that the intermediate compounds in question are nitro-bromo-keto-derivatives, and that their formation affords evidence that the elements of nitric acid first become added to the bromonaphthol, thus:—



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The theory that the formation of such addition-compounds precedes that of nitro-compounds generally, appears to afford a satisfactory explanation of a number of well-known facts which hitherto have remained unexplained. The non-production of nitro-compounds from paraffins and their derivatives appears as the natural consequence of the inability of paraffins to form addition-compounds. The theory affords a simple explanation of the formation of nitro-derivatives of phenols on nitrating hydrocarbons, for if the addition-compound lose $\text{H}\cdot\text{NO}_2$ instead of $\text{H}\cdot\text{OH}$ a phenol would result, thus—



An agent which would tend to withdraw water from the addition-compound would increase the production of nitro-compound and diminish that of phenol; and it is known that when a mixture of nitric and sulphuric acids is used, there is less of the phenol derivative produced than when nitric acid alone is employed. A compound like the addition-compound of benzene, represented above, would obviously be unstable, and prone to undergo oxidation; hence the explanation of the large amount of nitrous fume produced on nitrating benzene. The non-production of resinous matters when sulpho-acids are treated with nitric acid to form the corresponding nitro-compound by displacement of the SO_3H group by NO_2 is also elucidated by the authors' theory; the addition-compound formed in such a case would very readily break up into sulphuric acid and the nitro-derivative.—A new method of preparing nitro-derivatives, and the use of nitrogen dioxide as a nitrating agent, by H. E. Armstrong and E. C. Rossiter. The authors find that the unstable compounds formed by the addition of the elements of nitric acid to the bromo-derivatives of betanaphthol yield nitro-derivatives of the naphthol on treatment with alkali, a bromine atom becoming displaced by NO_2 . On treating the addition-compound with sulphurous acid, a practically theoretical yield of the nitronaphthol is obtained; this method appears to be of general application. The authors have been naturally led to study the action of nitrogen-dioxide, NO_2 , on unsaturated compounds of various kinds, in the hope of obtaining addition-compounds which by loss of HNO_2 would pass over into nitro-derivatives of the substances treated. They find that such addition-compounds are obtained, and on treatment with alkali and reducing-agents yield nitro-compounds. Thus betanaphthol yields 75 per cent. of its weight of nitro-betanaphthol; alphanaphthol behaves similarly. Phenol yields ortho- and para-nitrophenol. The authors propose to study the action of nitric acid and nitrogen dioxide on unsaturated compounds generally from the point of view indicated in this and the previous note.—Nitrification, by R. Warington. The first section of the paper describes early experiments, showing the existence of an agent producing only nitrites, and the means of separating it from soil. Successive cultivation in ammoniacal solutions made permanently alkaline with disodium carbonate was found to be a certain method of obtaining a purely nitrous agent. Pasture soil yielded the nitrous agent more readily than arable soil. The nitrous organism was isolated by the dilution method. Cultivations were made in an ammonium chloride solution with calcium carbonate. The nitrous organism oxidizes ammonia to nitrous acid, and has no effect on nitrites. It produces nitrous acid in solutions of asparagine, milk, urine, and urea. Grown in broth containing calcium nitrate, it does not reduce the nitrate to nitrite. It requires no organic matter for its nutrition, and is apparently capable of assimilating carbon from acid carbonates. The presence of either calcium or sodium acid carbonate distinctly favours nitrification; neutral sodium carbonate greatly hinders nitrification. The nitrous organism occurs as nearly circular corpuscles, which stain deeply. It also occurs as oval cocci, the ends occasionally more or less truncated. The remainder of the paper deals with the nitric organism. The results show that the nitric organism develops freely in inorganic solutions containing potassium nitrite, phosphates, &c., especially if supercarbonates are present. Monosodium carbonate, 1–4 grams per litre, exerted a very favourable influence; 6 grams per litre, a retarding influence. Disodium carbonate greatly hinders the action. The nitric organism produces neither nitrites nor nitrates in ammoniacal solution. In the absence of

ammonia, it energetically converts nitrites into nitrates; the presence of ammonia is apparently a great hindrance to its action. An attempt to isolate the organism failed. The nitrification performed by soil thus appears to be the work of two organisms, one of which oxidizes ammonia to nitrite, while the other oxidizes nitrite to nitrate.

Geological Society, June 10.—Sir Archibald Geikie, F.R.S., President, in the chair.—Before the commencement of the general business, Prof. Blake rose on behalf of those present at the meeting to congratulate the President on the honour that it had pleased Her Majesty to confer upon him. No one who knew him could fail to appreciate how thoroughly it was deserved; and the Geological Society would doubtless feel also the honour conferred on their science in the person of their President and the head of the Geological Survey of the United Kingdom.—The following communications were read:—Note on some recent excavations in the Wellington College district, by the Rev. A. Irving.—Notes on some post-Tertiary marine deposits on the south coast of England, by Mr. Alfred Bell. Communicated by Mr. R. Etheridge, F.R.S. The author's object in this paper is to trace the successive stages in the development of the present coast of the north side of the English Channel, and to ascertain the sources of the diversified faunas. The first traces of marine action on the south coast in post-Tertiary times, are found on the foreshore in Bracklesham Bay. The author's reading of the section is somewhat different from that of the late Mr. Godwin-Austen; and he divides the marine series into (1) an estuarine clay with Mollusca common to estuarine flats; (2) a compact hard mud; and (3) a bed of fine sandy silt with many organisms. These beds indicate a change from estuarine to deep-water conditions. A full list of the Selsey fossils is given, including, amongst other animals, upwards of 200 Mollusca. Of 35 species of Mollusca not now living in Britain, the majority exist in Lusitanian, Mediterranean, or African waters; furthermore, nearly 45 per cent. of the Mollusca are common to the older Craggs of the eastern counties. The author considers the fauna of the Portland Bill shell-beds to indicate the further opening of the Channel subsequent to the formation of the Severn Straits, and believes that this fauna represents the deposits wanting between the Selsey mud-deposits and the erratic blocks which, according to him, overlie the mud; these Portland shells indicate an intermediate temperature, "rather southern than northern," according to Dr. Gwyn Jeffreys. In conclusion, details concerning still newer beds are given, and lists of fossils found therein; and the author observes that there is no evidence to show when the English Channel finally opened up, beyond the suggestion of Mr. Godwin-Austen that, if the Sangatte beds and the Coombe Rock are of the same period, it must have taken place after their formation. After the reading of this paper some remarks were made by Mr. Etheridge, Mr. C. Reid, Prof. Hull, and the author.

Mathematical Society, June 11.—Prof. Greenhill, F.R.S., President, in the chair.—The following communications were made:—Systems of spherical harmonics, by E. W. Hobson.—On the motion of a liquid ellipsoid under its own attraction, by Dr. M. J. M. Hill.—On certain properties of symmetric, skew-symmetric, and orthogonal matrices, by Dr. H. Taber.—An application of the method of images to the conduction of heat, by G. H. Bryan.—A property of the circum-circle, by R. Tucker.

CAMBRIDGE.

Philosophical Society, June 11.—Prof. G. H. Darwin, President, in the chair.—The following communications were made:—On the part of the parallactic series of inequalities in the moon's motion which is a function of the ratio of the mean motions of the sun and moon, by Mr. Ernest W. Brown.—On Pascal's hexagram, by Mr. H. W. Richmond. The author applies Cremona's method of deriving the hexagram by projection of the lines on a nodal cubic surface from the node. By use of a new form of the equation to this surface the equations of the lines are obtained in a perfectly symmetrical form, and their properties thence developed.—A linkage for describing lemniscates and other inverses of conic sections, by Mr. R. S. Cole.—Some experiments on liquid electrodes in vacuum tubes, by Mr. C. Chree. This paper describes some experiments undertaken at the suggestion of Prof. J. J. Thomson on the electric discharge through vacuum tubes in which one or both of the electrodes were liquid surfaces. The liquids employed were mercury and sulphuric acid. The electrodes when solid were

of platinum or aluminium. Observations were taken of the differences presented by the discharge when the substance of an electrode was altered. The experiments were mostly at low gaseous pressures, and included observations on the character of the phosphorescence then accompanying the discharge.—On gold-tin alloys, by Mr. A. P. Laurie.—Note on a problem in the linear conduction of heat, by Mr. G. H. Bryan.

EDINBURGH.

Royal Society, June 1.—Prof. Chrystal, Vice-President, in the chair.—Prof. Tait communicated a paper, by Prof. Piazz Smyth, on two series of enlarged photographs, one in the visible, the other in the invisible, of the violet of the solar spectrum. The paper was accompanied by the photographs. The observations include part of the spectrum as previously observed by Mr. Smyth in the summer of 1884, and extend to an extreme distance in the invisible violet. The previous observations were included in sixty plates; in the present series, twelve more plates are added in the violet region, and two independent photographs of each part have been taken. The photographs agree with those of Prof. Rowland in indicating that the Fraunhofer line, "little *d*," is either entirely absent now from the solar spectrum, or has become very unimportant.—Mr. R. Kidston read a paper on the fossil plants of the Kilmarnock, Galston, and Kilwinning coal-field in Ayrshire. All the species which are described in the paper belong, with one exception, to the Lower Coal-measures.—Prof. Tait communicated the second and third parts of a paper, by Prof. C. G. Knott, on some relations between magnetism and twist in iron, nickel, and cobalt. Part II. contains a continuation of former experiments on the twists produced in the magnetic metals when they are under the combined influence of circular and longitudinal magnetizations. A rectangular rod of cobalt twists, like nickel, left-handedly, when a current is passed along it in the direction of magnetization. Iron twists right-handedly, unless strong fields are employed. There is no reversal of the twist in nickel when strong fields are used, but a maximum can be reached. The magnitude of the twist which is produced by a reversal of one force depends upon which force is reversed. In general, reversal of the longitudinal field produces the greater effect; but iron and nickel, in low fields, twist most when the current is reversed. Hysteresis is very evident in all the phenomena. Evidence is given in this part in confirmation of the truth of an expression, which was given in Part I., for the twist in terms of the elongations in a thin-walled tube of given radius. Part III. contains a discussion of the magnetic consequences of twisting a magnetized wire—more especially a circularly-magnetized wire. The peculiar manner in which the magnetic change sometimes lags behind the stress, sometimes shoots ahead of it, is fully investigated. This effect is found to depend upon the strength of the current, on the amount of the twist, and on the amount of vibration to which the wire is subjected. The longitudinal polarity which is acquired when a wire carrying a current is twisted appears to be high in comparison with the intensity induced at the circumference of the wire. This seems to indicate the existence of molecular groupings which alter their configuration when subjected to change of stress or of magnetic force. The effects which are observed when an apparently demagnetized wire is subjected to twist suggest that a magnetized wire may in certain circumstances consist of alternate layers of opposite polarities. Any stress which acts differently on these layers will produce powerful magnetic effects. From his own experiments and those of other observers, Dr. Knott concludes that the first effect of a shearing stress on the molecular groupings is not only to increase the average intensity in the direction of the magnetizing force, but also to bring into prominence a relatively high intensity in directions at right angles to it.—Dr. Buchan communicated a paper by Mr. R. T. Omond, Superintendent of the Ben Nevis Observatory, and by Mr. A. Rankin, assistant observer, on the winds of Ben Nevis. The exact determination of northerly winds is not very easy, owing to the shape of the hill. The cliff, 2000 feet in height, which forms the northern face, breaks these winds up, and makes them squally and uncertain. Some may be entered on the record as north when they should really have been entered as north-east or north-west. Southern winds are on the whole slightly more frequent than northerly winds are. At sea-level the most frequent wind is west; and south-west, west, and north-west include nearly half of the total observations—more than half if calms are excluded. These low-level winds are in exact accord-

ance with the distribution of barometric pressure over the British Isles according to the Buys Ballot's law, which asserts that the winds blow counter-clockwise round areas of low pressure, such an area lying to the north of the British Isles. But the Ben Nevis winds do not fit in with such a distribution of pressure at all, which indicates that isobars drawn at the level of Ben Nevis (4400 feet) have directions differing entirely from the directions of sea-level isobars. In other words, the distribution of average barometric pressure which extends over the North Atlantic and North-western Europe, and dominates the surface wind over that area, does not in this country extend to a vertical height of one mile. Precautions were taken to make certain that this difference was not due to a difference between the methods of observation at Ben Nevis and at low-level stations. If a cyclonic storm of small area is lying to the north-eastward, the sea-level winds are west or north-west; but the Ben Nevis winds may be north-east, blowing straight out from the centre of the area of low pressure. In larger storms the Ben Nevis winds are practically identical with the sea-level winds, which indicates that a storm has a vertical extent proportionate in some way to the horizontal area which it covers. The outflowing wind seldom or never occurs when the centre is to the south or west, but only when it is to the north or east; and it is most strongly marked when an anticyclone lies on the other side. The outflowing current seems to carry the ascending air of the cyclone to the descending anticyclonic regions. The non-observation of the outward current when the centre of the cyclone lies on the south or west may be due to the fact that it passes at a higher level than the top of the mountain, for it then consists of air passing from hotter to colder regions, which will presumably rise to a higher level. The veering of the wind at great heights, which should occur according to the usual theory of cyclones, is very rarely observed.—Dr. Crum Brown read a paper, by Dr. A. B. Griffiths, on the blood of the Invertebrata.

PARIS.

Academy of Sciences, June 15.—M. Duchartre in the chair.—On the deformation and extinction of isolated or periodic aerial waves propagated in the interior of delivery tubes without water and of indefinite length, by M. J. Boussinesq.—On a volatile compound of iron and carbonic oxide-iron-carbonyl, and on nickel-carbonyl, by M. M. Berthelot. The author finds that iron, taken in a particular state, combines directly with carbonic oxide at ordinary temperatures (about 45° C. gives the best results) to form a very volatile compound. The required state is attained by reducing precipitated iron peroxide by hydrogen, or by decomposing ferrous oxalate by heat, and completing the reduction with hydrogen. Iron-carbonyl is analogous to nickel-carbonyl, discovered by Mond, Lang, and Quincke (Journ. Chem. Soc., vol. lvii. p. 749, 1890). M. Berthelot has investigated the stability of the latter compound and its reactions with oxygen, sulphuric acid, ammonia, and nitrogen dioxide.—*Résumé* of meteorological observations made at Ecorcheboeuf, near Dieppe, from 1873 to 1882 by M. J. Reiset.—Observations of Wolf's periodic comet, made at Paris Observatory (West Tower equatorial), by M. G. Bigourdan. Two observations for position were made on June 12. It is remarked that the comet is a round nebulosity about 20' in diameter, and having a magnitude 13.3.—Observations of the new asteroid (310) made at Paris Observatory with the East Tower equatorial, by Mdlle. D. Klumpke. An observation for position was made on June 12.—Eclipse of the sun of June 6; observations made at Lyons Observatory, by MM. Gonnèsiat and Le Cadet. Measures were made of times of contact.—Observations of Wolf's periodic comet (1884, III.), made at Algiers Observatory with the Foucault telescope of 0.50 metres aperture, by MM. Rambaud and Sy. Eight observations for position were made between May 15 and June 8.—Eclipse of the sun of June 6, observed at the Observatory of the Flammarion Scientific Society at Marseilles, by M. Jacques Léoïard.—On the two forms in which the co-ordinates of the surface of the fourth degree, described by the summits of cones of the second order which pass through six given points, are expressed by means of θ functions of two arguments, by M. F. Caspary.—On an electric indicator for the detection of small variations of pressure in currents of gas, by MM. G. and L. Richard.—Researches on the application of the measure of rotatory power to the determination of compounds formed by aqueous solutions of mannite, with acid molybdates of soda and ammonium,

by M. D. Gernez. By measuring the proportions of salts in solution which give the maximum rotatory effect on polarized light, the author arrives at the molecular formula of the compounds formed.—On quinethyline, a homologous base of quinine, by MM. E. Grimaux and A. Arnaud.—On ureides derived from normal acids, by M. C. Matignon.—Mode of formation of methyl-campho-carbonates of methyl and ethyl, by M. J. Minguin.—On nitro-cyanacetic ethers, by M. P. Th. Muller.—Bleaching of cotton by oxygenated water, by M. Prud'homme. The addition of calcined magnesite to oxygenated water improves the bleaching properties of the latter. According to the author, the superiority of the results obtained is due to the formation of a peroxide of magnesium.—*Rôle* of the nucleus in the formation of the fundamental muscular reticulum of the larva of Phrygane, by M. G. Bataillon.—On a special disposition of the eyes in *Pulmonara basommatophora*, M. Victor Willem.—Experimental contribution to the study of growth, by M. Henry de Varigny.—On a cryptogamic disease of the *Acridium peregrinum*, by M. L. Trabut.—On the existence of a little Miocene vertebrate fauna in the rocks of the Saône valley at Gray, and at Mont d'Or Lyonnais, by M. Charles Depéret.—Contribution to the geological study of the environs of Digne, by M. Bachelard.—Fauna in a deposit of Quaternary strata at the environs of Pouillenay, by Don Jehl.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

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